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Volume X DECEMBER 1949 Number 12

DISEASES OF THE NERVOUS SYSTEM

A PRACTICAL JOURNAL ON PSYCHIATRY AND NEUROLOGY

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VOL. X DECEMBER 1949 NO. 12

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800 Avenue B., Galveston, Texas

PUBLICATION OFFICE
PHYSICIANS POSTGRADUATE PRESS
277 Broadway, New York 7, New York

DISEASES of the NERVOUS SYSTEM

(PUBLISHED MONTHLY)

A PRACTICAL JOURNAL ON PSYCHIATRY AND NEUROLOGY

*Mesantoin in Epilepsy, A Three Year Study**

JOSEPH L. FETTERMAN, M.D. and V. M. VICTOROFF, M.D.
Cleveland, Ohio

I. *Introduction*

Frequently preliminary reports of new drugs have been published without a follow-up later by the same authors. Yet, the true worth, or in a sense the full story, of any medication is seldom told in a study of a year's experience with a limited number of patients. Time alone is the true test of the therapeutic value of any drug. In some instances the initial benefit like the first blush of romance fades. In others, complications not anticipated at first gradually become manifest. Still there are examples of apparent failure which later become converted into success by increasing or otherwise changing the dosage to adequate levels. For these reasons it is the purpose of this paper to present a follow-up report covering an approximate three year period of study of 150 epileptic patients treated with mesantoin.

The literature of methyl - phenyl - ethyl - hydantoin, mesantoin, extends over a brief period beginning with the early paper by Loscalzo[1] in June 1945 followed by a publication by Clein[2] in July 1945. Later Kozol[3] presented an extensive consideration of this drug at a meeting of the American Psychiatric Association which was published in 1946. There has been a succession of papers by Fetterman et al,[4] Aird,[5] Hunter,[6] David et al,[7] Belinson,[8] Dejong,[9] and Lennox.[10] These papers have attested to the efficacy of mesantoin yet with caution as to complications. The possibility of serious dyscrasia even to the point of fatal leukopenia has been reported (Aird,[5] Bloom et al,[11] Ruskin[12]). Our papers have stressed the remarkable synergistic value of combining mesantoin with other drugs, particularly dilantin rather than offering a comparison of mesantoin with other anti-convulsants.[13]

II. *Material and Method of Study*

The case material here analyzed includes 150 persons treated in a private neuropsychiatric clinic as out-patients. Each has had a complete history, a physical examination, and appropriate laboratory tests including electroencephalography. The patients were then given medication and reexamined at regular intervals. Altogether about 150 have been followed for a long enough period and have cooperated sufficiently to be included in these studies.

Of the patients thus treated 36 were given mesantoin alone. This drug was used exclusively in such patients as had not been taking previous anti-convulsant therapy at the time when they consulted us. However, 114 patients already taking dilantin sodium and/or phenobarbital were given mesantoin as a supplemental drug.

Our program of dosage was to begin with a small amount, say one tablet of 0.1 Gm. (gr. 1½) mesantoin daily for one week. Then at the next visit the dosage was increased to two tablets per day. From this point onward the amount of mesantoin was adjusted to need. *In each instance our goal was not a*

*From the Fetterman Clinic, Cleveland, Ohio.

limited number of pills but a limited number of spells. Every experienced physician who deals with epilepsy has learned the safety and value of gradual adjustment of dosage to the adequate level and to avoid abrupt changes (Merritt[14]).

III. *Results*

Our three years experience confirms the hopeful report which we gave in our preliminary study. Mesantoin alone and particularly when combined with dilantin sodium has proved highly successful in controlling grand mal epileptic attacks. Our results in line with those of other observers[15] show that mesantoin is of little or no value for petit mal. It has provided remarkable benefit in Jacksonian epilepsy and occasionally in psychomotor equivalents.

We may state our results briefly as follows: Eighteen were listed as failures because of complications or because of lack of therapeutic benefit; 37 obtained slight to moderate improvement; 45 showed considerable benefit, and 50 derived remarkable improvement from mesantoin.

Thus it may be seen that mesantoin alone or combined with other drugs provided some degree of reduction in spells in 80 to 90 per cent of our patients. Those listed as slightly improved included epileptics who obtained a limited reduction in the number of grand mal seizures. Those whom we classified as considerably improved obtained more striking benefits. For instance the number of attacks was reduced to about a third of the former number. Classified as remarkably improved were those patients who were substantially relieved and in several instances were entirely free of seizures.

It is noteworthy that in the 36 patients who received mesantoin alone the therapeutic results were also high. Two were classified as failures; five were slightly successful; eleven were considerably benefited and eighteen greatly helped. In comparing the results of those who received mesantoin alone with those who had combined medication it should be pointed out that the former may be looked upon as milder instances or those less resistant to treatment. Patients who consulted us after they had taken dilantin sodium without success constituted a relatively treatment-resistant group. Many of them had been taking two, three, or four or more dilantin sodium capsules, 0.1 Gm., and yet were still having enough seizures so as to seek further medical help. Thus, even though the percentage of recovery was not as high in those of the combined group, nevertheless considering that they do constitute a more treatment resistant group our results were very satisfactory.

As we consider the factors that add up to such degree of improvement we must remember that it is not merely the medication but the method of administration that is important.

IV. *Technique of Dosage in Combined Treatment*

Effective treatment of the epileptic depends upon close supervision, the employment of one or a combination of drugs without being fixated upon one medication only, an unhesitating resolve in stepping up the dosage to the adequate level, cautiously and gradually adjusted to the individual's needs. This means an interested physician and a cooperative patient.

It is desirable after the physician had made the initial diagnosis to prescribe a small dosage of anti-convulsant drug. If the patient is already taking dilantin sodium and/or phenobarbital then it is our custom to add one tablet of mesantoin 0.1 Gr. (gr. 1½) at bedtime for one week. This can be maintained for a second week if no attack has occurred. When the patient is seen again he is carefully examined with particular search for enlarged glands, skin rash and other complications. In those who are sensitive a dermatitis or other reaction may appear during the first week or two. At this visit the patient may bring up the subject of drowsiness. It is well to reassure him that such lethargy tends to pass over during a period of time and that it may be overcome by physical activity. However, if the drowsiness is so marked as to reduce the patient's ability to work then it should be offset by prescribing dexedrine, 5 milligrams at breakfast and lunch. After the initial examination the patient is seen at intervals of one to two weeks up to a month. When it is evident that the patient has adjusted satisfactorily to the drug then the visits may be scheduled less frequently.

If the patient is still troubled by seizures then the dose of mesantoin is stepped up to

the point of tolerance. Thus many of our adult patients taking mesantoin alone required from four to eight tablets daily. Those receiving combined medication averaged two to six mesantoin tablets plus two to four dilantin sodium capsules daily. In a few instances where mesantoin provided but moderate relief dilantin sodium became the supplementary drug.

V. *Complications and How to Avoid Them*

A. *Skin reactions:* Mesantoin is closely related to nirvanal which commonly produces dermatitis. In our series close to ten per cent of patients developed a skin eruption. As a rule this occurs within the first week or two following the initial use of mesantoin and consists of an acute generalized erythematous eruption. Eczematoid, urticarial, acneiform or seborrheic lesions may also be present. Pruritus is common and secondary infection may set in. Less frequent is the subtle and gradual development of skin lesions months after the use of the drug. Three of our patients developed such a later complication which was more chronic than the acute forms. These eruptions are accompanied by lymphadenopathy, blood changes, and pyrexia. Fortunately they cleared up in one to two weeks following the discontinuance of the drug.

B. *Blood Changes:* Mild and temporary alterations in the blood picture occurred in 18 per cent of our patients. Sometimes it was but a temporary eosinophilia which spontaneously returned to normal. In the patients showing acute dermatitis, marked eosinophilia was noted. In several instances there was a leukopenia and a reduction of granulocytes. When these changes were found the blood was checked at repeated intervals. If they persisted then the mesantoin was discontinued. Likewise if there was a rash, adenopathy, and blood dyscrasia mesantoin medication was stopped immediately. For this reason and possibly because of good fortune none of our patients developed any critical dyscrasia such as has been reported in the literature. Ruskin reported a case of a seven year old girl who developed an erythema eleven days after she was taking 0.3 Gm. mesantoin daily. This patient grew rapidly worse, developed high fever and severe dermatitis bullae. There was a marked drop in neutrophils. Despite the immediate removal of mesantoin and intensive therapy "the clinical course led rapidly to her death." This child had previously exhibited skin reactions to other anti-convulsant drugs. In all, four deaths have been reported in patients taking mesantoin with or without other drugs and attributed to mesantoin medication.[14,15] In two instances the drug was continued despite warning symptoms. Our rather extensive series carefully observed for some three years was free of any fatality.

C. *Drowsiness:* Patients may encounter, usually in the early days of administration of mesantoin, a hypnotic effect ranging from mild and pleasant relaxation to marked lassitude and torpidity. Approximately 30 of our patients mentioned this phenomenon, six of whom required dexedrine, five milligrams twice a day as an average dose in order to dispel this annoying symptom.

D. *Stomatitis:* One patient in our series showed a marked inflammatory reaction in the mucous membrane in the mouth followed later by an exanthem after eighteen months use of mesantoin. This patient became severely ill with a syndrome including skin changes, lymphadenopathy and leukopenia and eosinophilia in the blood stream. She gave a history of sensitivity to many substances.

The possibility of toxic reactions from mesantoin should be borne in mind (Belinson,[8] Bloom,[11] Harrison,[16] Frank[17]). Whoever prescribes mesantoin should alert the patient and himself for possible toxic effects. A positive history of allergy calls for a smaller initial dose of mesantoin. The occurrence of fever, itching, rash, enlarged glands, anemia, petechae should not be dismissed as a casual occurrence but demands close clinical observation and studies of the blood. The further development then of symptoms or blood changes requires a reduction in dosage. We may thus avoid the near tragedies or the fatalities which did occur when a highly sensitive patient took a large dose or an unsupervised patient continued to take mesantoin despite a steadily progressive anemia and emaciation. *Patients must be warned NOT to take mesantoin or like medication indefinitely without supervision.*

E. *Electroencephalographic Observations:* A total of one hundred sixty patients received one or more electroencephalograms during the course of the study. The breakdown of the

results of these tests is as follows: Twelve of our patients had some local cortical pathology resulting from trauma, excised tumor, or other space-filling lesion or cortical atrophy. All twelve of these patients regardless of the electroencephalographic findings which ranged from borderline to sharply localizing showed good clinical response. Four patients had normal EEG's and also obtained a good therapeutic result. There was no correlation between EEG and therapeutic effect.

Sixty patients were studied by two or more electroencephalograms. Little reliable correlation can be established between the clinical estimate of the improvement and the change in the electroencephalogram from test to test. Although 36 patients showed either no change or a diminution in cortical dysrhythmia some were only slightly benefited while others were remarkably improved. Seven patients showed an increase in dysrhythmia yet three were classified as remarkably improved, three moderately helped and one listed as a failure.

As a curiosity we would like to describe the uncommon finding of an unusually rigid base line regular Alpha rhythm with so few variations in frequency or amplitude that for purposes of nomenclature we have termed it "Printed Alpha" for subsequent ease in reference to this phenomenon.

The phrase "well-medicated epileptic record" frequently appears in literature relating to electroencephalograms. As a matter of fact we have been in the habit of describing patients with a high per cent-time of regular Alpha as being "well-medicated epileptics" or "characteristic of well-medicated epileptics." The fact that among the ten patients who demonstrated this peculiar "printed" form three had negligible improvement and five had excellent improvement makes the phrase unreliable. We would advocate dropping this term because it creates the false impression that the EEG can furnish accurate proof of therapeutic effectiveness. We do not suggest that this type of Alpha described is related to mesantoin specifically although we call attention to it as a curiosity which has not been seen on our apparatus except in those patients who were receiving the drug.

VI. *Other Observations*

We have observed the remarkable benefit of mesantoin in two patients over 60 years of age who had shown episodes of confusional behavior and in whom the electroencephalogram presented dysrhythmia. The therapeutic effect of mesantoin in those cases was significant. On the other hand mesantoin did not bring about any appreciable change in personality in those epileptics who had manifested psychopathy, irritability, behavior difficulties associated with or perhaps independent of the epilepsy.

We had called attention in our first paper and are able to substantiate at this time the usually relaxing and sedative effect which mesantoin had contributed to many patients. Unlike dilantin sodium which tends to make some individuals tense, alert, wakeful, and irritable, mesantoin exerts a quieting effect. Quite a few patients commented on this sedative benefit from the mesantoin.

VII. *Psychotherapy*

The recent literature mentions the psychosomatic aspects of epilepsy and the value of psychotherapy. It goes without saying that all medication can be reinforced by some degree of psychotherapy. However, successful reduction of seizures provides the most direct and tangible psychotherapy.[18] In addition, the epileptic patients have personal and situational problems of the normal individual plus special ones of their own. Shame as to their disease, fear of the next attack, threat of job loss, doubts about marriage, child-raising and so forth shadow the life of the epileptic. During visits primarily intended for adjustment of medication the physician should utilize the opportunity to guide the epileptic through the maze of his problems.

VIII. *Instruction Sheet for Epileptics*

To obtain the maximum cooperation from patients it has been our custom at the first visit to explain something of the nature of the malady and the program of treatment to each individual epileptic and his family. An informed patient is a better patient. The following is a revised form of this instruction sheet.

1. Proper treatment is a joint, long-term responsibility between yourself and your physician.
2. Keep a written record of attacks so that you can report precisely when and how the spells occurred. Your family may add their observations.

3. At the present time several drugs are available to help with the prevention of your attacks. Your condition may require the use of a single remedy or a combination of several medicines.
4. The benefit which may be obtained from these medicines is sometimes offset by a reaction, especially if you are sensitive to a particular drug.
5. Consult your doctor first at frequent intervals and then after your condition is controlled less frequently. However, it is not prudent to take such medicine without supervision.
6. Record on your identification card the fact that you are subject to spells. Then you will be properly looked after if you have one of your reactions.
7. Take your medicine regularly. Do not discontinue it hastily because you are better for a short time or because you have not obtained complete relief. Your condition may require a large amount of medicine over a long period of time.
8. Your medicine is your guard against attacks. Neglect in taking your medicine leaves you unguarded.

IX. *Conclusions*

This paper reports a three year study with mesantoin in the treatment of epilepsy. Extended experience confirms our earlier report. The additional test of time has established the role of mesantoin as a useful anti-convulsant drug.

Mesantoin can be used alone or in combination with other drugs. It is synergistic particularly with dilantin but it can also be used with dilantin and with phenobarbital.

Of 150 patients treated with mesantoin alone or with mesantoin and dilantin a large percentage obtained some benefit. Of these, 18 were failures, 37 obtained slight to moderate improvement, 45 showed considerable benefit, and 50 derived remarkable improvement from mesantoin. Jacksonian attacks responded particularly well to this drug. Grand mal attacks were reduced while petit mal were generally unimproved.

An average combined dose for adults is 0.4 Gm. (6 grains) of mesantoin and 0.3 Gm. (4½ grains) of dilantin daily best given as one to two tablets of mesantoin and one capsule of dilantin three times daily.

Although highly effective, mesantoin is capable of toxicity. The unfavorable reactions include drowsiness, dermatitis and occasionally blood dyscrasia. Careful clinical observation will reduce the hazards.

A small initial dose in sensitive patients, gradual increase in accordance with need and adequate amounts in those who tolerate mesantoin will yield a maximum of therapeutic benefit with a minimum of toxic effects.

There was no correlation between EEG abnormalities and clinical result.

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*Transorbital Lobotomy**

(SURVEY AFTER FROM ONE TO THREE YEARS)

WALTER FREEMAN, M.D., Ph.D.
Washington, D. C.

Watts, in his kindly way, with considerable wisdom, recently said to me: "Walter, I guess further experience with transorbital lobotomy will prove that it isn't quite as good as you think it is and not quite as bad as I think it is." Of course, this philosophy applies to anything that is new, and it is needed, first, in order to keep up promising work in spite of discouragements, and second, to restrain overenthusiasm, unfounded speculations, and professional night-terrors. This is a report on nearly 100 patients who have undergone transorbital lobotomy during the period from January 1946 to April 1948. Recent notes are available on all but a few of the patients.

When I first reported my experiences with transorbital lobotomy before the American Psychiatric Association, in May 1948,[1] I could confirm the statement of Fiamberti[2] that the operation was swift, simple, and safe, but I was unable as yet to determine the effectiveness of the method. Further experience was needed to determine whether the operation could permanently relieve patients of serious mental disorders without, at the same time, producing undesirable side-effects that would render the operation a desperate measure of last resort. I tried, at that time, to establish the indications for transorbital lobotomy, but with limited success.

Later published papers by Jones and Shanklin[3] and Haas and Williams,[4] were preliminary reports of work that was started under my direction and continued with occasional suggestions from me. Consequently, there is some overlapping in our case material. My acknowledgements are gladly directed to these psychiatrists who have helped to establish some of the claims that I have made for transorbital lobotomy. At the same time, and in other hospitals, I have been presented with most unfavorable material for purposes of demonstration. I have felt, indeed, as though I were on a big game hunt, armed only with a pea-shooter. Such was the case at Greystone Park State Hospital late in 1948. There, in connection with controls being run for the topectomy research under the Columbia-Greystone Associates,[5] I was presented with a series of patients who had been institutionalized for periods of from five to twenty years.

It has become apparent that anyone who undertakes psycho-surgery must be prepared to operate upon a large proportion of dilapidated individuals or not operate at all. If he can achieve satisfactory results, even in a small number of chronically disturbed individuals, the method may later be applied to patients with a somewhat more favorable outlook; and then, along the line somewhere, a few patients will come through the operation with superlative results. This is apparently the only way in which the indications and contraindications for transorbital lobotomy can be established. Theoretical considerations have some weight, but substantially only with the protagonist.

Reviewing the work of the past three years, I can divide the discussion roughly into the favorable and the unfavorable aspects of transorbital lobotomy, and present some of the main advantages and disadvantages. First, however, a recent development in the technical aspects of the operation may be presented. Transorbital lobotomy is now performed as follows: With the patient supine on the table, two or more electroconvulsive shocks are administered at intervals of a minute or two, and the operation is undertaken during the stage of post-convulsive coma. The transorbital leucotome is inserted into the conjunctival sac in the vault of the orbit, aimed parallel with the bony ridge of the nose, and driven through the orbital plate until the 5 cm. mark is opposite the margin of the upper eyelid. The handle of the instrument is then pulled as far laterally as the bony conformation of the orbit will permit. This severs some of the thalamo-

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Read before the St. Elizabeths Medical Society, April 29, 1949.

frontal fibers in the lower quadrant of the frontal lobe. The instrument is returned to its former position, parallel with the bridge of the nose, and deviated slightly toward the midline. A few more light taps force the instrument farther through the orbital plate to a depth of 7 cm. Allowing 2 cm. for the conjunctival tissues, this brings the point 5 cm. within the frontal lobe, usually a little anterior to the frontal horn of the ventricle. At this point, the instrument is oriented carefully, exactly in the frontal plane, and parallel to the bony ridge of the nose. A photograph is taken to verify the location. The handle of the leucotome* is 7 cm. long, so that on the profile photograph the location of the point can be checked by plotting the extension of the shaft inward from the margin of the eyelid.

At this depth, the handle of the leucotome is moved medially through an arc of about 20 degrees. (This usually means as far as the ala of the nose). It is then moved laterally about 30 degrees. This procedure severs the thalamofrontal radiation in the upper part of the frontal lobe, underlying areas 9 and 10. Deviation too far in either direction may lacerate arteries in the depths of fissures, and furthermore, is uncalled for because of the small additional number of projection pathways that are severed.

In favorable cases, this is all that need be done, and the instrument is withdrawn, pressure being applied over the eyelids to control bleeding into the orbit, while the other side is being similarly treated. In unfavorable cases, comprising the large number of chronically disturbed schizophrenic individuals that gravitate to the leucotomist, favorable results may be obtained by an additional maneuver directed toward the thalamic projection in the more posterior and basal portions of the frontal lobe. With the handle of the instrument deviated outward at about 30 degrees from the sagittal plane, the handle is strongly elevated, as far as the confines of the orbit will allow, so that the shaft of the instrument is laid almost parallel with the orbit plate. In some cases this is easy, but in cases in which the orbital plate is thick and tough, it proves to be impossible. In intermediate cases there is not infrequently a palpable and audible fracture of the orbital plate, with sudden "giving" of the instrument that permits very free movement of the tip within the cranial cavity. The handle of the instrument is returned to the parasagittal plane and another photograph taken in order to establish the location of the shaft. This maneuver severs the thalamo-frontal fibers as they bend around the anterior horn of the ventricle and turn medially to enter the cortex in the vicinity of the gyrus rectus. Although it adds materially to the ecchymosis and accumulation of sub-arachnoid fluid in the orbital tissues, there have been no serious consequences in a series of some 40 cases. This is called the deep frontal cut and produces a somewhat more prolonged period of inertia and disorientation than that witnessed after the ordinary procedure.

Advantages of Transorbital Lobotomy

Speed: Transorbital lobotomy requires ten minutes, whereas the shortest period for major lobotomy that I have seen (McKissock of London) is twenty minutes. Most lobotomies require an hour or more.

Simplicity: Transorbital lobotomy requires a leucotome for each side, a hammer, some towels, and small dressings. That is all. There is no need to shave the scalp, prepare the skin with disinfectants, or to observe the rather elaborate ritual demanded in the good surgical clinic. Since the conjunctival sac is sterile in 98 per cent of cases, and since a good flow of tears (which are bacterio-static) occurs following the electric shock, the operator is working in a safe field, provided he does not allow the instrument to touch the overlying skin; and, since he does not touch the shaft of the sterilized instrument, he does not require gloves or mask. The point of insertion of the instrument is immediately covered with a natural reinforced dressing (the upper eyelid) and the perforation is small enough so that the escape of blood and cerebrospinal fluid is slight and brief, even after the deep frontal cut.

Safety: In this first series there were no deaths from operation. There was one case of serious hemorrhage, with prolonged postoperative inertia, permanent disability and occasional convulsions, and two cases of transient hemiplegia, one accompanied by seizures, but neither interfering with work-

*The transorbital leucotome is manufactured by H. A. Ator, 5332 29th St., N. W., Washington, D.C.

ing capacity. Two other patients had somewhat pronounced inertia and incontinence for several days after operation, but both are now fully recovered and occupied at their usual tasks. There have been no infectious complications, nor rhinorrhea, nor ocular damage.

Applicability: Transorbital lobotomy can be performed by the psychiatrist who has studied in the laboratory the anatomy of the frontal lobes in relation to the orbits and who takes pains to avoid some of the hazards that accompany the operation. The psychiatrist is well acquainted with the administration of electric shock and, therefore, does not require the services of an anesthetist, and he can perform the operation with a minimum of surgical preparation. Recovery from operation is almost as prompt as from electric shock, and therefore, a minimum of nursing attention is required. Consequently, the operation lends itself well to performance in isolated, understaffed hospitals, where the problem of the chronically disturbed individual is met ordinarily with seclusion and restraint. My record of 18 transorbital lobotomies in a single day has already been surpassed.

Personality Changes: Transorbital lobotomy is seldom followed by any social handicap attributable to operation, and then only in cases with complications as noted above. A series of cases studied by Dr. Mary Frances Robinson[6] has shown minimal changes in the special self-adjustment tests that she has applied, but she had to exclude some of the superior cases because she was unable to match them with adequate controls.

In successfully treated cases of mental disorder, the patient's personality is preserved to an excellent degree, and although creative capacity has not been certainly demonstrated, these patients are well equipped with social and altruistic capacities that are so often lacking in even the most successful cases of major lobotomy.

Disadvantages of Transorbital Lobotomy

Bailey[7] states: "The outstanding development of the year is transorbital lobotomy. This procedure is of a nature to distress a surgeon greatly. It is being used in psychiatrist's offices without provision to deal with complications which must occasionally result. Such a blind procedure is unjustifiable, and it is to be feared that its simplicity will cause it to be used too freely and bring disrepute on a potentially very useful measure." Watts[8] also is alarmed by the attitude that the psychiatrist may develop in regard to transorbital lobotomy. More time is needed to determine the validity of these objections.

The main disadvantage of transorbital lobotomy is its limited effectiveness. It fails more often in the chronically disturbed schizophrenic individual, in the chronic pain case, and in the chronic involutional depressive than the major operation does. This is proved by the fact that major operation has been successful in a number of patients in whom the transorbital operation has been followed by prefrontal lobotomy. Whether the deep frontal cut as described above will accomplish the same results as the major operation is still undetermined.

The other disadvantages are mainly theoretical or esthetic. The dangers of such a "blind" procedure have been shown to be unimportant. The possibility that lobotomy will be too widely applied is something that will trouble the conscience of the physician, but there is always recourse to the courts in this free country. I have been asked whether it is possible that Cardinal Mindzentry was thus "prepared" for his "confession of error." There is no way at present of determining one way or the other, but the reports that His Eminence revealed considerable tension at the time of his confession is against the theory. The performance of transorbital lobotomy by unskilled persons is a hazard. A mortality rate higher than that of the major operation would be a contraindication, but this has not been observed.

From the esthetic point of view, transorbital lobotomy is offensive to the surgeon, particularly the neurological surgeon. In the first place, he is offended by the repeated convulsions on the operating table, almost as much as is the psychiatrist by the sight of blood. In the second place, the surgeon likes to see what he is cutting, and likes to staunch the flow of blood, even from oozing venules and capillaries, a procedure that is manifestly impracticable in the transorbital operation. In the third place, he likes to be able to reenter the wound in case of hemorrhage or other complication. In cases in which

hemorrhage has occurred, I have hitherto relied upon supportive measures. Since both sides are operated upon at the same time, it has been impossible to decide which side was bleeding; the patients were in poor condition and probably would have succumbed to a bilateral exploration; and a search for the bleeding artery would have led to widespread laceration of the frontal lobe, with inevitable bad results. It is possible that inserting a canula through the opening already made with evacuation of the intracerebral hematoma might succeed. Fortunately, such accidents are rare.

TABLE 1

Status of Living Patients 12 to 40 Months After Transorbital Lobotomy

Diagnosis	Number	Per cent Employed	Per cent Keeping House	Per cent Home	Per cent in Institution
Schizophrenias	58	29	12	16	43
Affective psychoses	26	15	23	38	23
Psychoneuroses	9	56	22	11	11
Pain cases	2	0	0	50	50
TOTAL	95	27	16	22	35

TABLE 2

Results of Transorbital Lobotomy 12 to 40 Months

Diagnosis	Number	Per cent Good	Per cent Fair	Per cent Poor	Operative Deaths	Later Deaths
Schizophrenias	58	35	19	46	0	0
Affective psychoses	27	33	34	33	0	1
Psychoneuroses	9	78	11	11	0	0
Pain cases	4	25	25	50	0	2
TOTAL	98	39	23	38	0	3

Results of Transorbital Lobotomy

Of the first 100 cases of transorbital lobotomy followed for a period of one to three years, it may be said that the results are reasonably satisfactory, as shown in the accompanying tables. A substantial number of rather unfavorable cases, almost all of whom had previously been treated by hospitalization and shock therapy, have been returned to complete social effectiveness. In some cases brilliant results were obtained. In a series of nine patients where the transorbital operation failed and prefrontal lobotomy was later carried out, three can be considered as satisfactory results, while the other six may have been relieved of their distress, but remain hospitalized.

Conclusions

Transorbital lobotomy is most effective in patients who are relapsing after relief by shock therapy and yet not severely enough disordered to require major lobotomy. Unpublished reports indicate that it is effective in chronically disturbed schizophrenic patients, but the period of observation is too short. The same holds true for painful conditions due to organic disease. Transorbital lobotomy lends itself to performance by the psychiatrist without facilities for major neurosurgery. It is simple, swift, and relatively safe. It does not result in personality downgrading comparable with that found after prefrontal lobotomy.

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*The Rural Patient in the Child Guidance Clinic**

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There has been a wide-spread and rapidly accelerating interest in mental hygiene and child guidance during the last few years with more and more effort to make child guidance clinic services available to children in rural areas. This effort has been a prime factor in the search for reasonably brief treatment. The purpose of this paper is not so much to discuss the various techniques of brief psychotherapy with children but more to examine some of the factors which have emphasized treatment methods of shorter duration than conventional analysis and the usual deep psychotherapy practices of many child guidance clinics. Certain philosophies have developed with shorter treatment which are worthy of note.

An early attempt to bring psychiatric help to rural children was represented in the traveling clinic. The original procedure was for a clinic staff of psychiatrist, psychologist and psychiatric social worker to visit a given area every two to eight weeks. They would examine the children brought in by local welfare workers, nurses, teachers or interested and zealous citizens and then have a brief conference. Recommendations were made and the interested persons listened with awe and respectful silence to the gems of professional advice coming from the lips of the distinguished visitors from the city. All too often there was no real consideration of the different attitudes, customs, mores, and ways of life of the groups that were seen. As a result, many impractical suggestions were made. In many areas, traveling clinic services existed for years (and still do) with little change in the character of problems being brought to the clinic. Acute psychotics, feeble-minded, severe delinquents, psychopathic personalities and hopelessly spastic or otherwise physically handicapped children continued to constitute a large percentage of the patients. It is quite obvious that they would since these are conditions which would most readily be recognized as requiring attention. They are also the types of problems which cause the people of the community the most difficulty.

It soon was glaringly apparent that what might well be considered one of the fundamental prerequisites of all psychotherapy is the concept that no psychiatric or mental hygiene problem actually exists until the patient himself or persons responsible for the patient believe it to exist. Acceptance of this concept does not mean that professional workers in the field of child guidance and mental hygiene should do nothing until people seek them out with problems about which they are concerned. It does mean, however, that in any program involving psychiatric care of children, education is an important part of the program. The education is a two way affair. There must be not only the teaching of mental hygiene principles to the people of the community but also an interpretation of what psychiatric services as represented by the clinic team of psychiatrist, psychologist and psychiatric social worker can actually offer. In addition, there must be constant awareness and repeated evaluation of the type and degree of psychiatric service individuals are able and ready to use at any given time. Finally, it must be kept in mind that by far the best education is actual experience with psychiatric services. If the experience is bad, the continued use of mental hygiene facilities and application of mental hygiene principles by the people of a community will be set back. If the experience is good, there will be that sort of gradual and sound growth which will make for continuance and more intelligent use of psychiatric help.

Recognition of these principles led to the development of a new kind of clinic. Instead of traveling periodically into rural areas it was felt that it would be more realistic to set up a clinic in an urban center which was the hub of a large rural area. The clinic gave preference to rural children and those factors which made for more efficient use of psychiatric treatment facilities were emphasized. The clinic itself was stationary; that is, the

*Read at Annual Meeting of American Orthopsychiatric Association, New York, April 1948.

clinic personnel worked continuously at the urban office with only sporadic visits to the rural area and these only for the purpose of reaching a better understanding of the rural attitudes and problems. This new venture proved of great value. It showed that some of the problems which had previously been considered as handicaps to good psychotherapy could now be used to advantage. I refer to the great distances from which rural children must come to the clinic and to the fact that rural children and parents often cannot be seen for more than a few visits.

Both of these factors are present at the Child Guidance Clinic of the University of Texas, Medical Branch at Galveston, which is primarily a diagnostic teaching clinic but where therapy is also a definite need. Children are sent to the University for diagnostic study from all over the state of Texas and more often than not, because of distances well over a hundred miles, they cannot return for subsequent visits. The same handicaps exist at The Guidance Center of the Bureau of Mental Hygiene at Houston, which is a service clinic with emphasis on treatment. The Guidance Center serves the entire area of Houston and Harris County. The maximum distance children are required to travel is approximately thirty miles. In the Houston clinic, about ten per cent of the case load is rural. In the Galveston clinic, the rural percentage is considerably higher. The procedures in the two clinics vary considerably. In the one clinic, the factor of limited time is paramount and emphasis is placed on the utilization of this limited time to the best advantage of the patient within the diagnostic and treatment process. In the other clinic, where more prolonged treatment with rural children is feasible, it is possible to utilize and observe the effect of coming to the clinic at regular intervals.

A discovery of value to psychotherapy stemming from the restriction of only one or a very few brief visits is the awareness on the part of both patient and therapist that only limited time is available to unearth and do something about the primary problem for which the child was brought to the clinic. Very little time is used in discussing the weather and other extraneous matters, which often form the preliminary to a psychotherapeutic session where time is not essential. Direct questions and equally direct answers are an important part of these brief psychotherapeutic interviews. Experience has shown that both children and adults know what is wrong with them and that they will tell about it when they know the time is short and when they sense from the therapist that he is interested in their problems, willing and anxious to help, but bound by a limitation of time and the press of other duties, his own personal obligations, and even his own personal relaxation and pleasures. This principle was a basic factor in the excellence of screening examinations (despite the many mistakes) of induction boards in the last war.

The following is an example in part: George N., an eight year old boy, was referred to the clinic in November 1947 with the complaint of vomiting in school, especially during the lunch period. Personal and family history revealed nothing out of the ordinary. Father and mother related that they got along very well. They appeared to be an average middle class family of some culture and refinement. According to their story, George and his little sister constituted no problem at home. They were obedient, healthy and happy. The parents denied any differences over the handling of the children. When the examiner expressed some doubt that everything was quite the picture of sweetness and light the parents portrayed, pointed out that time was short, that they were at considerable expense to make this visit to the clinic, and that he believed they definitely had some idea as to what the trouble was, it was revealed that father was quite concerned because George was too shy and bashful, read a great deal, was sensitive and got along poorly with other children. It was with much reluctance and some embarrassment that the father told that his little daughter was much more of a tomboy and more aggressive than George. He wanted his son to be a regular American boy and had been putting considerable pressure on him by ridiculing him and trying to force him to be more athletic and agressive. When he learned of the complaint of vomiting at school, he threatened that if the boy did not cease this, he would fix up a "vomit-bucket" which George would be required to carry to school with him. Mother, was more or less passive about all this, tended to protect George and disapproved of her

husband's methods.

George himself was an attractive, well nourished boy who was at first shy and uncommunicative. He denied knowing why he was brought to the clinic. On the therapist's insistence that he felt pretty sure that George knew why he was there and he was quite certain George had thought about it, George admitted that he vomited at school. At first he was not sure just why he did, but when the therapist suggested that possibly George must be pretty sore at somebody to be willing to be made fun of because of his vomiting, George unburdened his feelings toward the school principal and his father. He related that shortly after he began going to the lunch room, he became sick and vomited some spinach he was eating. The principal, thinking the boy had vomited willfully, forced him to eat the remainder of the spinach. George developed a strong feeling of resentment toward the principal and being unable to express his antagonism overtly, took up the mechanism of vomiting. It proved not only a successful method to irritate the principal but also became a means by which he could get back at his father.

George and his parents were at the clinic for two interviews. Within that time, the father was able to see that perhaps he had been too demanding and was trying to make George into something that he wanted the boy to be, rather than letting George develop in his own way. Both father and mother were able to come to better agreement on their methods of handling George. The boy himself was able to express some of his antagonistic feelings in a normal way by talking to someone who was interested and who did not ridicule or condemn him. A three month follow-up report through George's principal, who, incidentally, was seen shortly after the family's first visit to the clinic, reported that George's vomiting ceased a short time later and as a result of the withdrawal of pressure by the father and the principal, George is playing better with other children. He was becoming more agressive and able to stand up for his rights.

Another discovery of value in psychotherapy resulting from the stationary clinic serving rural children is that it is often an advantage rather than a handicap for parents and children to travel from a distance. In the Houston clinic, particularly, where rural children are given regular weekly appointments for psychotherapy, their transportation is not arranged for them and getting to the city is admittedly a hardship. Parents and children are encouraged to find their own way of reaching the clinic. The resourcefulness individuals will show when they really want to do something is amazing. Exercise of this resourcefulness helps also in meeting the problems for which they originally came. In the course of the last few years, all sorts of ways have been utilized by parents and children to get to the clinic for their appointments. One high school age boy would ride into town each week with the driver of the milk truck on his rural route. In the afternoon he would seek a "hitch" back. A mother and child arranged their appointment to coincide with the day a neighbor brought his produce to market so that they could ride in with him. It meant getting up early in the morning and they spent a good part of a day waiting, after their appointment was over, before they could start back home. Neighbors and friends have been enlisted to drive patients into town. In many cases there was no other way but that the whole family pile into the family jalopy in order to get Johnny into the doctor for his weekly appointments. Still other patients have used the bus service, putting up with an hour or two bus ride each way in order to have one hour at the clinic. In some areas, family agencies and relief agencies have been helpful in providing bus fare for these trips. At the Tri-County Child Guidance Center of Harrisburg, Pennsylvania, the Junior League of a neighboring community set up a transportation fund to provide bus or train fare for those unable to afford it, so that they could keep regular appointments at the clinic. In all of the situations where money is provided for transportation, the clinic itself does not give the money to the patient. Mothers are told where they may obtain it but must make the request themselves.

The effect of having to arrange transportation and of the long weekly trips is to shorten therapy. As is well known, most child guidance problems are the result of parent-child and family-child relationships. Quite often, mother is so busy at home trying to make both ends meet financially, having innumer-

able household duties and possibly farm chores in addition, that she actually has little time to listen to her children's difficulties. The weekly ride of an hour or two during which other cares are temporarily set aside provides an opportunity for mother and child to really come to know each other. In the case of Edward G., a ten year old boy coming each week on the bus from a neighboring community some twenty-five miles away, therapy was shortened significantly. Edward was a quite emotionally disturbed boy referred because of restlessness, occasional running away from home, truancy and for being unreasonably demanding of his mother. The family lived in a very small, two-room house and were extremely crowded. Finances were meager. Edward could hardly be blamed for occasionally wanting to get out of a place where there was scarcely anything to call his own and hardly any room to play on days he could not get outdoors. He had difficulty in understanding why his mother couldn't give him things that other boys had, and mother was so preoccupied with her struggle to provide the bare necessities of life that she had little time to devote to an understanding of Edward's emotional needs. Their weekly bus trips together within the short space of two months aided in bringing about a better understanding between the two. Edward got to know and appreciate some of the problems his mother had, to recognize a little of the family financial struggle, and as a result he became much more gentle, anxious to help, and much less demanding of money from his mother. He wrote poems which he brought to the therapist but which he also shared with his mother. He would read them to her on the bus. His mother would listen and offer corrections when he asked for them and encouragement whenever she felt the poems were good. Through them she began to understand more of Edward's problem, allowed him a little more freedom at home, respected his right of ownership even to string and miscellaneous junk which Edward collected. One cannot say that Edward's sessions with the doctor and his mother's interviews with the psychiatric social worked did not help, but it is my feeling that a major portion of the therapy occurred on the bus. A case which had all the earmarks of a long period of therapy, ended satisfactorily in less than five months. At last reports from the probation officer who originally referred the case, there has been no further trouble in over a year.

Another case is worth citing briefly. One family with three children made a day of the trip to the city to keep Johnny B's appointment. Father brought them all in in the family car. After Johnny and his mother had finished at the clinic, the entire family would take in a movie, go shopping, or often have a family outing in the park. Whereas, before, there had been constant bickering and quarreling among all the members of the family, things soon smoothed out and they all looked forward with eagerness to the day of Johnny's appointment. Johnny's problem of enuresis cleared up rapidly, and as end of the therapy approached, mother kept bringing up excuses for their continued coming. In her last interview she was able to say, "It just seems like we have a new family. I'm surely going to miss these appointments. Now we won't have any excuse to come to town." She readily accepted the suggestion that discontinuing the clinic visits should not necessarily end the family outings.

We have made no attempt to discuss techniques of brief psychotherapy as such. We have, however, given examples of therapy which was shortened by the employment of principles and philosophies which have been emphasized through the necessity for children and parents to come to the child guidance clinic from long distances. Limited time can often prove an advantage when it is accepted that people do know what is wrong with themselves and know that they have the capacity to do something about it quickly when it is put to them directly. In child guidance problems which are largely concerned with parent-child and family-child relationships, visits to the clinic from a distance often shortens therapy because it allows time for greater mutual understanding between parent and child.

Penicillin or Malaria Therapy in the Treatment of General Paralysis?

(A CLINICO - ANATOMIC STUDY)

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In 1944, I was given an assignment, by the National Research Council, to treat general paralytic patients with 10 million units of penicillin, administered in doses of 50,000 units each intramuscularly, every three hours. No other therapy was to be used.

The purpose of this schedule was to compare a group of penicillin-treated cases with a similar group of cases of general paralysis which were treated with malaria only.

The Research Council was aware that this comparison could be best done at the Central State Hospital at Indianapolis, because this institution had the largest case material treated with malaria alone, and which had been carefully observed from a clinical, serological and histologic point of view for more than 20 years.

As the result of the studies, we are today in a position to appraise more accurately the value of penicillin in the treatment of general paralysis. Broadly it is our conclusion that penicillin is equal to malaria therapy and may even surpass it by a slight margin, if penicillin be given in sufficiently large doses. The amount of penicillin equivalent to malaria therapy, is a minimum of 10 million units.

Effect of Penicillin on Clinical Aspect and Serological Improvement

From a clinical point of view, penicillin in the aforementioned amount had a beneficial effect, ranging from arrest of the disease to complete recovery in 88 per cent of the cases. Malaria therapy was beneficial in only 75 per cent of the patients.

The slight superiority of penicillin over malaria therapy was also shown in the behavior of the spinal fluid. Generally speaking, the improvement in all so-called non-specific tests was definitely better following penicillin than following malaria. By non-specific tests are meant cell count, globulin, total protein and the colloidal gold reaction.

With penicillin there was a reduction of the cell count to normal in every case, while in malaria therapy there were instances in which the elevated cell count remained unaffected in spite of a good course of fever. In all instances the decreased cell count remained permanent. The total protein and the globulin were reduced in all instances and returned to normal, except in those patients who died within a few months following therapy. There was also a striking improvement in the colloidal gold reaction. In two instances, the colloidal gold had changed from 5555432210 to 2111000000 in nine months. This was the most rapid change I have ever observed in general paralysis, and never had occurred so rapidly following malaria. In other cases, the improvement has been slower, and in a few instances one or two 5's were retained for two to three years.

A decrease in the intensity of the Wassermann titration occurred, but this change was less rapid. In the first year there was little, if any change in the Wassermann reaction of the spinal fluid and even in the second year the improvement was not striking. Time is a pre-requisite for this type of serologic response. The serologic reactions in the blood were even more resistant. There was, however, some evidence in the second and third year of serologic improvement of the blood Wassermann.

Appreciation of the time factor in the improvement of the serologic reactions is most important. A general paralytic patient who comes for re-examination six months following penicillin therapy and still shows abnormalities of the spinal fluid Wassermann, may be wrongly interpreted as a treatment fail-

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Read at the First Annual Meeting of the American Academy of Neurology, French Lick, Indiana, June 1 to 3, 1949.
The work described in this paper was done under a contract, recommended by the Committee on Medical Research of the Office of Scientific Research and Development to the United States Public Health Service (formerly the National Research Council).

ure and be subjected to another course of penicillin.

Minimum Total Dosage of Penicillin

As to the dosage of penicillin, which equals malaria, it has already been mentioned that 10 million units are considered the minimum total amount. This estimate is based on spirochete studies in the brain tissue of penicillin-treated general paralytics. Figure 1 illustrates

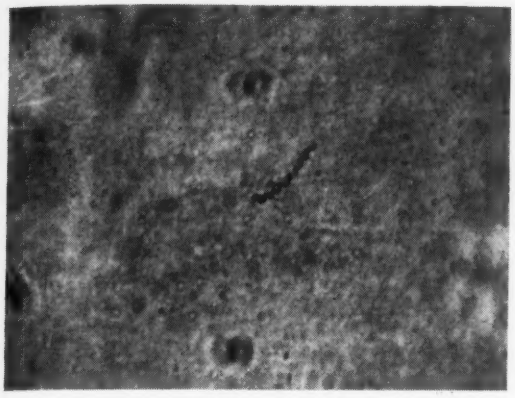

Figure 1 (Case 1): T. pallidum in the brain cortex of a general paralytic patient who had been given 10 million units of penicillin, in doses of 100,000 units each, administered intramuscularly, every three hours. Dieterle stain.

a spirochete in the brain cortex of a general paralytic patient who had been given 10 million units of penicillin, administrated in doses of 100,000 units each. In this instance we had departed from the 50,000 unit dosage. The patient died 3 weeks after completion of the therapy. Since the patient had died so soon after treatment, the question was raised whether the spirochetes in the brain represented live or dead organisms. It is a well established fact that dead spirochetes are removed very rapidly from the living tissue. This is shown in early and in experimental syphilis, where the disappearance of the spirochetes begins a few hours after the injection of arsphenamines.

If the T. pallidum of Figure 1 had been found in a malaria-treated brain, its presence would be of no concern, because in malaria-treated brains the spirochetes are eliminated by immune processes set in motion by the stimulation of the reticulo-endothelial system.[1] However, the process of formation of antibodies by the activated reticulo-endothelial cells takes time. It may be a matter of weeks or months. For that reason, in malaria-treated brains, immediately following cessation of the treatment, spirochetes are still present. But the spirochete, shown in Figure 1, was found in the brain of a general paralytic patient treated with penicillin and therefore its presence has an entirely different clinical importance. There is no stimulation of the reticulo-endothelial system, i.e., of the defensive powers of the host. The primary action of penicillin is on the syphilitic organisms themselves. In other words, it is due to direct spirocheticidal action. Therefore, since no antibodies are formed in the penicillin-treated patient the few spirochetes, which manage to survive an insufficient amount of the drug, may become the source for the production of a new generation of the syphilitic organisms. According to Magnuson, Eagle and Fleischman,[2] spirocheta pallida divides by successive fission of one organism into two spirochetes, requiring 30 hours for each division.

The presence of spirochetes in the brain after the administration of 10 million units indicates that this amount is not quite enough, and that for safety reasons 15 millions are recommended in the treatment of general paralysis. Effectiveness of penicillin therapy depends largely on total dosage which in turn depends on length of exposure of the T. pallidum to the drug.

Effect of Penicillin on Brain Changes of General Paralysis

At the onset it may be stated that the favorable effect of penicillin on the symptomatology and serologic reactions of general paralysis is reflected to an equal degree in the brain tissue.

Although a considerable number of general paralytics have been treated with penicillin, and some of the patients have died in subsequent years, neuropathologic studies have not been forthcoming except for those studied by Herrera[3] and Smith and De Morais.[4] Some of their patients were treated with insufficient amounts of penicillin and died from four weeks to three months following penicillin therapy, which is too short a period to effect a definite change in the histopathologic picture. In two of their cases, however, the authors[4] were under the impression that the inflammatory lesions were less than in the average untreated patient. Spirochetes were not found in any of these

brains.

Up to this moment, only four patients of our own series, treated with penicillin alone, have come to autopsy. However difficult it may be to determine accurately from a few cases what effect penicillin has on the tissue, important data were obtained, which no doubt will be amplified when more anatomic material is available. Histologic studies are of utmost importance since experience in neurosyphilis has shown that the improvement in clinical symptoms in some instances may be only temporary and even misleading as far as the activity of the syphilitic infection is concerned.

Apparently, penicillin does alter the signs of cerebral damage as effectively as malaria therapy. There is the same gradual reduction in the intensity of the round cell infiltrations. Concomitant with this there is a diminution of the paralytic iron pigment and a disappearance of the microglial rod cells.

A brief survey of the histologic observations of these four cases is instructive, since the patients died at strategic intervals of the study.

The first case of dementia paralytica died three weeks after the termination of penicillin therapy. This patient has already previously been mentioned. He had received a total dosage of 10 million units of penicillin, administered intramuscularly in doses of 100,000 units every three hours, day and night. In the brain cortex there was a relatively moderate degree of perivascular round cell infiltration. It is questionable, however, that there was any regression of the inflammatory process due to therapy. It is common knowledge that there is considerable variance in the degree of the syphilitic inflammation in untreated cases. In contrast to the moderate inflammatory process, the iron reaction was markedly positive. There was no sign whatsoever of any stimulation of the reticuloendothelial system. The latter is not only the outstanding feature of malaria therapy, but it is the principal factor of its modus operandi.[5] The lack of this reaction was made clear by supravital examination of the liver, spleen and bone marrow, where activated macrophages were not noted. The most important finding in this patient, who had finished three weeks previously a course of 10 million units of penicillin, was the demonstration of one spirochete in the brain cortex (Fig. 1). Intensive search in numerous other sections did not unearth further specimens of the syphilitic organism. The demonstration of this survivor of T. pallidum may be of therapeutic significance in the question of the necessity for retreatment. This organism and very likely others were obviously not killed by the drug. There is the possibility that the surviving organisms may multiply sufficiently to counteract the therapeutic action of penicillin.

In Dattner's[6] series of patients with neurosyphilis, treated with penicillin alone, 11 per cent had to be retreated, and of the original failures over half responded well to a second treatment with larger total doses of penicillin.

The second patient had died two months after being given a course of 10 million units of penicillin. There was a fully paralytic serology before the beginning of therapy. One week prior to death the spinal fluid was unchanged with the exception of the cell count which had dropped from 25 to 2 cells per cmm. In the meninges, in spite of a spinal fluid cell count of 2 per cmm., plasma cells were present in great abundance. In some areas of the pia-arachnoid there were as many as 80 to 100 plasma cells in one oil immersion field (Fig. 2). Throughout the brain were marked perivascular round cell infiltrations. In short, the brain had the appearance, as if it had not been treated at all. Spirochetes were not

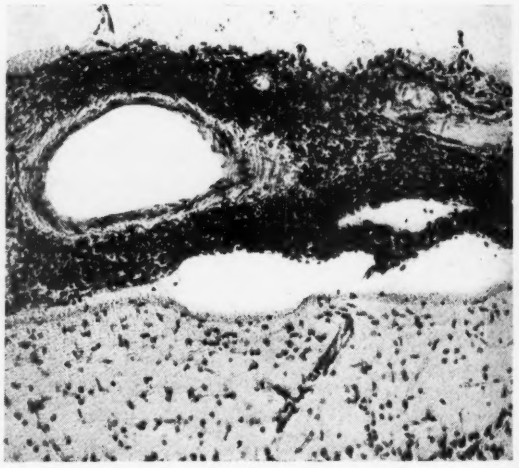

Figure 2 (Case 2): Meninges and brain cortex with unimproved general paralytic process. In spite of a reduction of the cell count from 25 before treatment to 2 cells per cmm., one week prior to death, there was an abundance of plasma cells in the pia-arachnoid. The patient was treated with 10 million units of penicillin and died 8 weeks after penicillin therapy was terminated. Toluidin blue stain.

found. There was no sign of a macrophagic cellular reaction in the hematopoietic organs.

The third and fourth cases died 18 and 24 months after they had received 10 million units of penicillin each. In both instances, the total protein of the spinal fluid had reverted to normal, the colloidal gold curves were 3332211000, and the cell counts were 4 and 0 cells per cmm., respectively. The blood and spinal fluid Wassermann were still four plus. In the third case, there was marked greyish turbidity of the pia-arachnoid which was mostly due to fibrosis. There was an occasional plasma cell in the meninges.

In the fourth case, the meninges were clear. There was no cortical atrophy and, grossly, the brain could not be recognized as that of a general paralytic patient. But in the meninges a few isolated nests with plasma cells could still be recognized. In the cortex of both patients, the perivascular infiltrations had receded to such a degree that under low power magnification the cortex had a normal appearance (Fig. 3). With a high power objective, however, it was easy to find isolated plasma cells in the wall of cortical vessels and capillaries. The iron reaction was negative. The rod cells had disappeared. Spirochetes were negative in both instances.

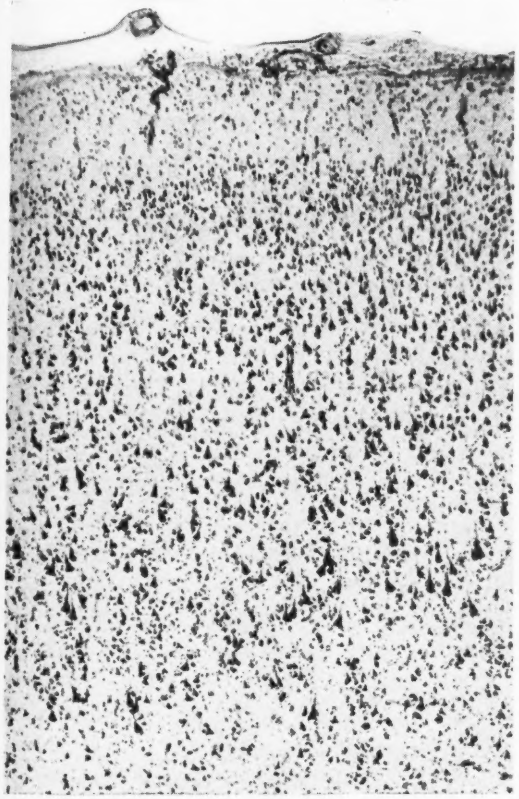

Figure 3 (Case 3): Brain cortex of general paralytic, who died 18 months following the administration of 10 million units of penicillin. Under low power magnification, the cortex has a normal appearance, but with a high power objective, isolated plasma cells can still be found in the walls of cortical vessels. Toluidin blue stain.

In the third patient, at necropsy, a diagnosis of syphilitic aortitis, involving the arch of the aorta, was made. On microscopic examination, in some aortic tissue blocks, foci of densely packed plasma cells and lymphocytes were present in the adventitia. In the central nervous system no such heavy inflammatory areas were observed in this patient, suggesting that the syphilitic exudate in the aorta is much more difficult to influence with penicillin than the exudate in the brain of general paralysis. A similar observation was made in general paralytics with syphilitic aortitis where malaria therapy was employed.

Summary

In a comparative evaluation of malaria alone and penicillin alone in the treatment of general paralysis, the impression was gained that penicillin at least equals, if it does not excell malaria therapy, when penicillin is given in sufficient amounts. Ten million units of penicillin is considered equivalent to a course of therapeutic malaria. The occasional presence of spirochetes in the brain after the administration of 10 million units of penicillin suggests that even this amount may not be sufficient and that for safety reasons 15 million units are recommended in the treatment of general paralysis.

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Further Observations on Organization and Technic of Group Therapy in Psychoses

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For the past few years physicians at the Boston State Hospital have been actively treating psychotic patients with group psychotherapy. Continued experience in this field has made possible observations not previously recorded. This paper presents further observations and experiences particularly with regard to technics of therapy which have been found helpful and effective in work with psychotic patients. Some observations on organization of groups for this type of therapy will be included.

1. *Organization of Groups*

A summary of our previous paper[1] with respect to organization of groups is as follows: Groups of ten to fifteen patients were preferred by the majority of therapists. It was then thought that progress of the group was interrupted when new members were added. Subtraction of patients seemed to be of little consequence. The most popular schedule of meetings was three times weekly. Duration of meetings was usually one hour. Attendance was not compulsory though social pressure was used. The meeting place should be off the ward in a setting free from distraction. Changing the meeting place seemed to interfere with the progress of the group. It was noted that a fairly well defined seating arrangement developed after a number of sessions. Little difference was seen whether or not patients were informed beforehand that they were to begin group therapy sessions.

In respect to one of the above points our opinion has changed. We now feel that the addition of new patients to the group is of little consequence to its progress. In groups on our Reception Service, patients are frequently added with little noticeable effect.

We can offer no further observations at this time with respect to problems of organization. Considerable discussion however has centered around the problem of selection of patients and composition of groups. This seems to offer a worthwhile field for further work, but we have progressed little in this direction.

2. *Technic*

Our previous paper described our technic as follows:

The first meeting was opened with a brief orientation as to the purpose of the meetings. Patients were invited to express their opinions freely and assured that they might speak of anything they cared to without restriction. It was suggested that through such free expression of opinion patients might be of help to one another. Most of the therapists imposed no restrictions on behaviour.

Our technic was more specifically described as participation on a casual conversational level with appropriate comments being made at opportune times. The therapist's role was that of a catalyst wherein he attempted to arouse action and reaction on a feeling level. In this paper we will elaborate in particular on three concepts, *first,* the therapist's role as a catalyst, *second,* the technic of participation in casual conversation and *third,* the appropriate comment.

The Therapist as a Catalyst

This term was borrowed from the field of chemistry and was chosen to emphasize two points: that a catalyst first keeps a reaction going, and second, has no other function than keeping a reaction going. The implication for therapy is that the therapist facilitates interaction between patients, but takes care not to use the situation to act out his own personal conflicts or problems.

In this respect a lecturing or questioning role is avoided so that the therapist is not a forbidding or authoritative figure. Rather we try to insinuate ourselves as members of the group. We feel the therapist should be discouraged from impressing on the group

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how intelligent he is or how much he knows about emotional problems.

On the other hand we have noticed some factors that seem to be of benefit in keeping the reaction going. The attitude of the therapist is of primary importance. The attitudes which we have come to stress are those of a sincere interest in the patients, honesty in relationships with them, and some understanding and appreciation for their problems and difficulties.

It has been our experience that a sincere interest in the patient is a great asset in therapy. Patients sense quickly when the therapist by his attitudes and comments shows a lack of interest.

One of our number had an experience which illustrates the effect of such lack of interest. This doctor had a group of chronic patients who for some time had remained almost completely silent. The therapist would occasionally offer a comment with the hope of stimulating conversation or activity but with little success. Eventually the therapist himself lapsed into a non-participating silence in which he pursued some of his more private thoughts. On discussion with other members of the staff the therapist discovered that his "heart had not been in it" so to speak. With awareness of this he was able to assume a more alert and interested attitude in which he sat forward in his chair, paying closer attention to activity in the group. Just this in itself seemed to be enough to bring considerable success in promoting conversation and interaction in subsequent sessions.

It is helpful if the therapist is honest especially with regard to his own feelings and actions towards his patients. For example, one of the big internal struggles of the therapist is the handling of his own resentment towards patients. Such resentment is immediately detected by the patient and the therapist may sometimes be questioned as to his feelings. It has been our experience that it is quite a relief to the patients if these feelings are acknowledged by the therapist. In this way the therapist can indicate that he also is human and subject to much the same feelings as his patients, thus soothing the anxiety which his resentment arouses.

Another aspect of honesty with patients is in answering questions which they ask in the form of complaints regarding hospitalization. The therapist is part of this system of authority and as such will be the butt of much hostility and resentment. We have found it better to acknowledge our position as such, thus permitting the patients to verbalize resentments and frustrations admittedly rationalized but none the less real.

Understanding and respect for the patient's feelings and difficulties are helpful in the therapeutic situation. We have our own special way of saying this, namely that the therapist provides an atmosphere of "all-rightness." Interest, honesty and understanding then, are of benefit to the therapeutic process. We might say that "they enhance the catalytic effect of the therapist."

The Technic of Participation in Casual Conversation

This description covers two points. First we make use of commonplace conversation in preference to prying into the patient for more intimate material regarding personal conflicts and problems. The second point is that in using this expression we wish to minimize the content of what is said by patients and instead to focus attention on the feelings which lie behind what is said or done. We are more concerned with what the patient means than with what he says.[2]

We talk with our patients on any topic whatsoever, no matter how trivial or inconsequential the conversation may appear to be. Last year we were mainly concerned with the effect of this style of participation in keeping things going and at the same time, allowing us to become members of the group. We have since found that such apparently trivial conversation is an excellent entree into the emotional life of the patients and may often reveal a good deal about his sentiments and attitudes. We have also noticed that just as much feeling can be linked with superficial conversation as with so-called "deeper productions."[3]

An illustration of the manner in which important feelings may be associated with apparently trivial conversation is seen in every day experience. A young man with a motive in mind approaches a young lady at a party. The ensuing conversation may touch on the most trivial of topics, certainly on everything but the motives of the young man. Nevertheless, both persons understand the

feelings of the other and an agreement of sorts is readily reached. The trivial conversation has served as an entree into each others emotional life. A bond has been established and a subject of great emotional significance to both has been discussed, paradoxically, without even talking about it.

The Appropriate Comment

We use the term appropriate comment mainly in an attempt to define the role of the therapist with respect to the interpretation of material brought forth by the patients.[4] Last year we were less concerned with interpretation in itself than with promoting conversation and interaction. We still do little in the way of interpretation in the sense of relating present conflicts and interpersonal issues to those of infancy and childhood. Rather we attempt to understand what the patient is trying to convey to us in terms of what he feels. The appropriate comment may be a query, approbation, mild disagreement, or any sort of remark which helps to stimulate the flow of conversation and the emergence and recognition of these underlying feelings.

Ideally the appropriate comment should indicate the "all-rightness" of the feelings expressed by the patient. It should also show that the therapist has some appreciation and understanding of the preoccupations of the patient which are hinted at in the material brought forth. For example, a patient expresses annoyance in conjunction with alleged or actual mistreatment by his mother. An appropriate comment might be, "It hurts to have these feelings towards mother," rather than, "You seem angry with your mother." It is true that the latter comment brings to attention the patient's underlying feelings towards his mother. The former comment however, "It hurts to have these feelings towards mother," not only acknowledges the underlying feelings but has the added advantage of implying that it is all right to have these unacceptable feelings, thus tending to soothe the patient's anxiety over them. This is essentially what we mean when we speak of the therapist providing an atmosphere of "all-rightness." The therapist has done this by implying that he too has had these feelings, was also hurt by them, and that all human beings have suffered at some time in this way. The patient thus feels safe to share these unacceptable feelings with the therapist. Furthermore, with the more appropriate comment, the therapist has shown his appreciation and understanding of the patient's anxiety by hinting at the patient's preoccupation over his love and need for mother. The choice of a more appropriate comment has thus been facilitated by the therapist focussing attention on what the patient meant rather than what he said.

The therapist has further opportunity to indicate his understanding when questioned about psychotic symptoms, such as delusions and hallucinations. Such questions are usually phrased so as to create an issue over the validity or truth of the experiences. We prefer that the group answer questions of this sort. However, we may often comment from a premise which runs roughly as follows—that hallucinations for example are not only valid, but also very vivid personal experiences, and that it is of interest to both the therapist and the patient to figure out what possibly could have given rise to them, for they are without doubt unusual and naturally clamor for explanation. This diverts discussion from the validity of the experiences to a more profitable area, namely what everyday experiences and feelings past and present are associated with these psychotic symptoms.

The therapist may also indicate his understanding with questions in the nature of patients asking about themselves in disguise. It seems more helpful to answer such questions as much as possible in terms of the patient's own needs, rather than the therapist going into any details of his personal life. For example, when a patient asks the therapist if he ever becomes angry with his wife, there is no need for the therapist to give any personal details on this subject. Besides, if the therapist concerns himself with what the patient means rather than what he says, he will see that what the patient really is asking, "Is it all right for me to feel hostile towards my wife?" An appropriate comment might be, "Yes, we all feel hostile at times towards our partners," indicating, "Of course, it is all right for you to feel this way—now it is your turn to tell us more about how this all developed." The therapist has thus answered this question in terms of what the patient really wanted

to know without giving any details of his own personal life.

Many questions of course are not of this type. Patients do show a personal interest in the therapist. Personal opinions and preferences are frequently asked of the therapist. This type of question seems better answered in a brief and straightforward fashion.

Most naturally we do not always make the appropriate comment. Our comments are all too frequently inappropriate. Often we feel the situation is ripe for some comment, yet we find ourselves tongue-tied. Minutes, hours, or days later the appropriate comment may flash across our mind.

We have noticed two ways of adding effectiveness to the appropriate comment. First, by phrasing comments in the patient's own words and second, by using words with a double meaning. For example, the word "heart" and the expressions "heart trouble" and "heart disease" often crop up in our group therapy sessions. Mental disease is figuratively a disease of the heart. The heart is where we feel things most keenly, things hurt most in the heart, etc. The words pain and hurt are very frequently used, most often in the sense of physical pain and hurt. When these words are used it can be profitable to formulate a comment so as to hint at the emotional pain and hurt and suffering that is often concealed by a physical complaint.

There are two other factors which we have come to feel of importance in the therapeutic situation. First, the sensitivity of patients to the unconscious components of the therapist's behaviour, and second, the therapist's role in setting limits.

Our patients seem to be much more sensitive to the therapist's inadvertent or unconscious behaviour than to his conscious attitudes. A warm smile, the twist of a lip, the tone of one's voice, a quick adjustment of one's clothing, a glance at one's watch, and so forth, are much more accurate indicators of the therapist's actual interest and understanding than anything he might say to his patients. The therapist indicates interest, boredom, anxiety or frustration mainly through his own inadvertent responses or non-verbal cues. This may easily affect the material which the patients bring forth. In this way the sentiments and prejudices of the therapist have their effect on the therapeutic process.

The following example illustrates how the frustration of a therapist may influence the productions of the patients. One therapist recalls his great irritation with one of his patients who through constant push of speech was apparently subduing the rest of the group into relative silence. On discussion with other members of the staff, the therapist became aware that in his irritation he had consistently ignored this patient thus making an obvious issue of the situation in the eyes of the other patients. With awareness of his irritation the therapist could express more interest in the productions of the offending member. This was apparently enough to permit the other patients to feel safe in verbalizing more freely.

We mentioned last year and we still usually find it necessary to actively restrict or prohibit patients. However, we do feel that the therapist sets limits to the patient's behavior by his own advertent responses and may even in the same way invite patients to go too far. Occasionally it is necessary to actively interfere. One therapist, for example, was obliged to do this when in a session a patient grabbed a fellow patient by the testicles causing him to yell in pain. This same therapist has found it necessary to interfere or voice his displeasure on other occasions. This particular group has a number of excited patients which may partly account for the greater necessity of actively setting limits. With increasing respect and trust in the therapist, however, gross antisocial behaviour automatically decreased.

The setting of limits may possibly have a more subtle meaning for the patient than is at first apparent when attention is focussed on the mere prohibition of antisocial behaviour.[5] For example, a patient in his everyday experience may feel quite ineffective when other people behave aggressively towards him. By being aggressive towards the therapist he is forcing the therapist to give a practical demonstration of how such situations can be handled more effectively. Instead of seeing "how far he can go" with the therapist, the patient may rather be challenging the therapist to show him how he can handle these disturbing situations in a more grown-up way. The setting of limits may thus have potentialities for emotional

growth of the patient. Although, this subject has come under considerable discussion our observations at this point are not too extensive. We feel this might prove a valuable area for further work.

Summary

In summary we have presented our continued experience in group therapy with psychotics with particular reference to problems of technic. The cornerstone of our technic is first, the concept of the role of the therapist as a "catalyst," second, the technic of participation in casual conversation, and third, the appropriate comment. A sincere interest in the patients, honesty in our relations with them, and respect and understanding for their problems and difficulties have been found to enhance the catalytic effect of the therapist. Mention is made of the importance of the therapist's inadvertent behaviour in revealing his attitudes towards the patients and their productions. It has occasionally been found necessary to set limits in certain situations. This most generally appears to take place automatically on the basis of respect for the therapist's interest, honesty and understanding. The potentialities of the setting of limits for emotional growth of the patient is indicated as a fruitful area for further investigation.

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Use of Sodium Pentothal in Anxiety States

(A PRELIMINARY STUDY)

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Introduction

One of the most frequent conditions seen by the psychiatrist in private practice is the anxiety state.

We are using the term "anxiety state" according to the definition of the American Classification of Mental Disorders as quoted by Strecker and Ebaugh:[1] "Anxiety state: cases which show more or less continuous anxiety and apprehensive expectation, with paroxysmal exacerbations associated with physiological signs of fear, palpitation, dyspnea, nausea, diarrhea, are to be classified here. Emotional tension is apt to be high, and irritability and intense self-preoccupation may be prominent, particularly during episodes."

With psychotherapy alone, many of these conditions are subjected to long, drawn out therapeutic programs; and thus, some technique to help shorten the psychotherapeutic method would be helpful. Narcosynthesis with sodium pentothal fulfills the technique which leads to a more satisfactory conclusion in a shorter period of time.

Use of Sodium Pentothal in Anxiety State

We are reporting thirty-seven cases of anxiety state that improved under sodium pentothal narcosynthesis. These thirty-seven cases were subjected to narcosynthesis, with interviews ranging from a minimum of one interview to a maximum of seven interviews, with the average being two to three interviews. Of these thirty-seven cases, nine patients were subjected to one sodium pentothal interview, thirteen to two interviews, eleven to three interviews, two to four interviews, and one patient to five and seven interviews respectively. All thirty-seven cases have been followed from three to fifteen months, and at the time of this preliminary study have shown substantial improvement.

Due to the heterogeneous composition of the time factor and the number of interviews

employed, the conclusions of necessity must be drawn in terms of generalities; and the preliminary study must be extended in two directions: first, in following for a longer period of time the cases reported above; and second, in subjecting a much larger group of patients to an equally intense program of therapy and eliciting the same favorable results.

Case Reports

In order to demonstrate the above statistics, we shall offer several specific cases of typical anxiety states and their results with sodium pentothal narcosynthesis.

Case 1: M.R., 39 year old white, unmarried female, was seen first on March 11, 1947. Her chief complaints were a fear of being among people and a fear of travelling that required her leaving her work. On several previous occasions within the past ten years following psychic trauma, the patient experienced similar episodes of anxiety and depression and was under the care of psychiatrists. However, her most recent attack, subjectively, was the worst in length of time and severity of symptoms.

The patient was subjected to three pentothal interviews, during which the recent death of a twin sister preceding the current episode was ascertained as the precipitating factor. The patient's entire personality make-up was studied and revealed to the patient, and intensive narcotherapy and psychotherapy was given. The patient regained confidence in herself and returned to work. The follow-up fifteen months later reveals the patient still working and in good spirits.

Case 2: L.S., 29 year old white, married male, was seen first on February 3, 1947. His chief complaints were pains in his knee joints and periodically recurring headaches. He was under the care of a physician, who was very friendly to him and following thorough physical examination felt the conditions to be not of organic origin. On superficial spontaneous subjective statements, everything in the patient's familial life was fine. Further intensive objective questioning yielded only problematical and vague tendencies toward an insecure family life. The patient was subjected to four sodium pentothal interviews, during which a great amount of insecurity and lack of contentment in certain phases of his family life appeared. As each of the individual problems was aired and reconciled in the patient's mind, the symptoms became less and less; until the point where the patient volunteered the knowledge that the headaches would appear only during periods of aggravation and emotional upset, then followed by the knee pains. Following the period of intensive narcotherapy and psychotherapy, the patient felt sufficiently improved to be discharged except for check-up visits. The patient has been followed for fifteen months with substantial improvement.

Case 3: G.M.L., 29 year old white, married female, was seen first on July 23, 1947. Her chief complaint was vomiting following eating, irrespective of food intake as to type or amount. This condition of course had led to a marked loss of weight. An exact psychiatric history revealed an individual with a deep problem beneath her superficial air of well-being. The patient was subjected to two sodium pentothal interviews, during which it was ascertained that an extremely unhappy marriage and circumstances surrounding the marriage had led to her condition. By bringing these facts out in the open, and forcing her to the reality of the situation, her vomiting disappeared and she followed through with the logical solution to her problem. The case has been followed for eleven months with substantial improvement.

Case 4 is more dramatic and atypical than it is typical. It is the case of A.A., 32 year old, white, married female, who was seen first on November 11, 1947. The patient expressed a marked fear of being left alone; a fear of several years duration causing a great deal of inconvenience to the husband, whose hours of employment were irregular. The patient was subjected to a sodium pentothal interview, and just as the drug was being injected the patient leaped up from the table, exclaiming loudly in protest to stop. When questioned about this irregular reaction, the patient went into dramatic details as to the death of a sister by a dread disease who had received many injections hopelessly, and how the patient vividly recalls the moment of death. Then by further implication, it became obvious that the fear of being alone was the insecurity of illness overtaking her and pre-

cipitating in a tragic death similar to her sister's without aid from anyone. On complete explanation followed by intensive psychotherapy, the patient gained in confidence, and has continued to do so over the past six months.

Case 5 is also more dramatic than typical, but yet quite fascinating. J.B., 25 year old white, single male, was seen first on March 1, 1947 with a chief complaint of feeling not at ease with his classmates and around other people with whom he should be friendly. He felt that his anti-social tactics had become so conspicous, that he was afraid where the consequences may lead. He was subjected to a sodium pentothal interview, and he expressed himself at the crucial point of the interview by saying: "I know I don't want to tell you this, but I feel I cannot help myself." Then the patient told a story of how early in childhood while bathing he discovered the pleasure that came from masturbation, and thus has continued masturbation throughout many years with the fears that ignorance of the subject brings. On enlightening the patient as to the fallacy in his thinking, and demonstrating that his lack of sexual knowledge was more harmful than his sexual habits, he was elated and showed almost dramatic gratitude. Followed by short periods of pleasant psychotherapy, the patient has adjusted himself perfectly to his situation over the past fifteen months.

Summary and Conclusions

1) Anxiety states are among the most frequent conditions seen by the psychiatrist in private practice.

2) Psychotherapy alone is a long, drawn-out procedure for the treatment of the anxiety state in many cases.

3) Narcosynthesis with sodium pentothal fulfills the technique which leads to a more satisfactory result in a shorter period of time.

4) Thirty-seven cases of anxiety states that were substantially improved following sodium pentothal interviews are presented.

5) In order to ascertain the effectiveness of the treatment, additional time is required to follow the patients already studied, as well as to follow further patients in a equally intense study over a long period of time.

6) When these factors can be fulfilled to make the results conclusive, both in respect to a large enough sample and an ample period of time, a subsequent report will be published.

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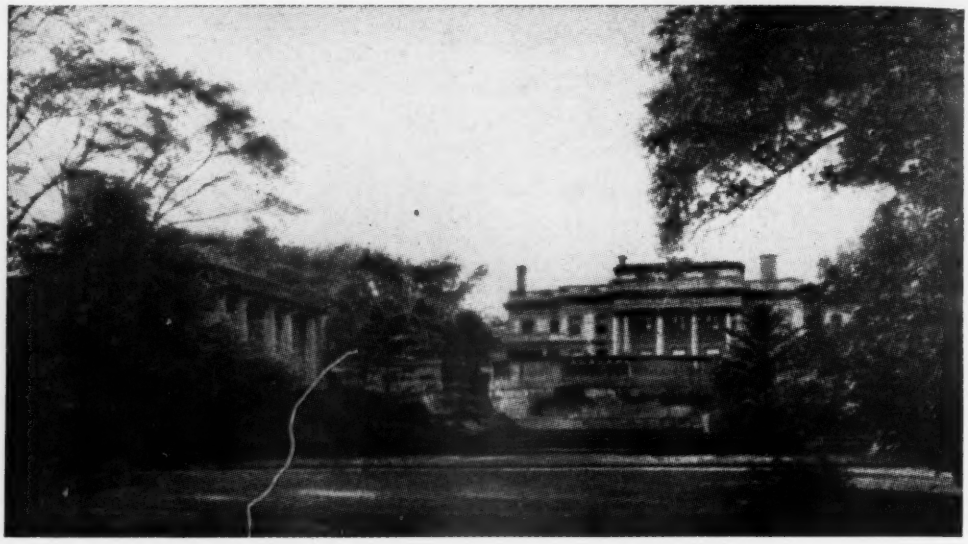

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